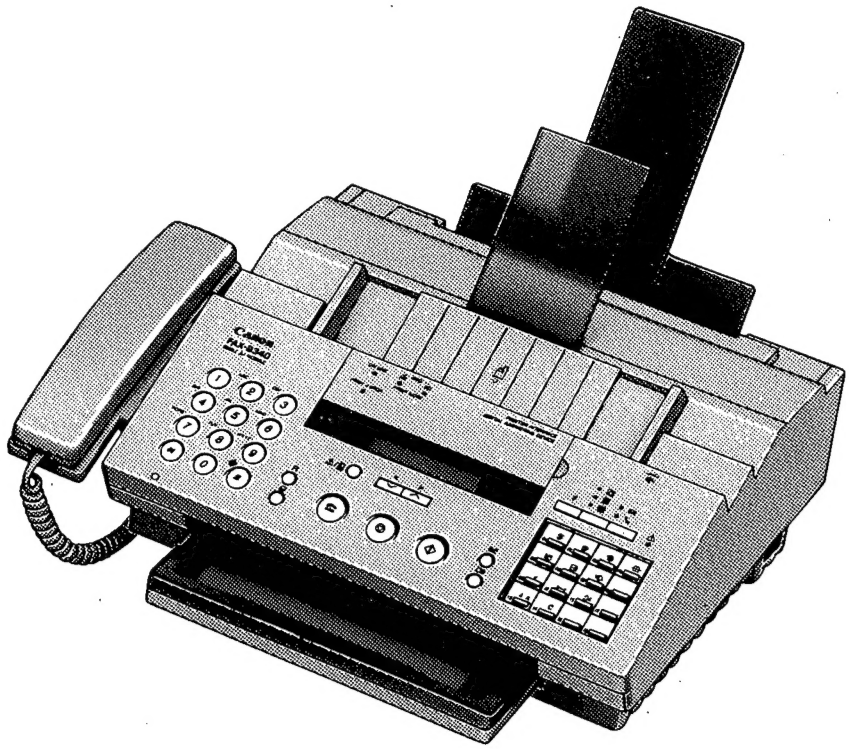
FACSIMILES

Canon

FAX-B320/B340

Printer Instruction Book



ENGLISH

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Printer Instruction Book

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What your fax printer is all about

Congratulations on your purchase of a new Canon fax with built-in Bubble-Jet printer. With its standard *Centronics* interface, you can now connect your fax to a computer and use it as a high-quality printer.

You'll find that the fax printer offers exceptional print quality and fast printing speeds for both text and graphics. Bubble-Jet technology also means fast, clean, and simple maintenance thanks to economical Bubble-Jet ink cartridges.

Features for high-quality printing

The built-in Bubble-Jet printer is equipped with a host of features to meet all of your printing requirements. Among them are:

- Convenient paper handling with the fax paper cassette that holds up to 100 sheets of paper.
- Two emulations that allow the printer to emulate other popular printers for complete software compatibility:
  – The BJ-10 emulation which emulates the IBM Proprinter X-24E.
  – The Epson LQ emulation which emulates the Epson LQ-510.
  This means your printer is compatible with any software applications that support not only the above mentioned printers, but also any Canon BJ-series printer.
- Choice of print modes/speeds that allow you to choose between print quality, speed, and a quiet work environment:
  – The high quality (HQ) mode provides high quality output along with high speed printing of 173 characters per second (cps).
  – The high speed (HS) mode provides draft quality printing at a speed of 248 cps.
  – The super high quality (SHQ) mode provides the highest quality printouts at a speed of 124 cps and is exceptionally quiet.
- 360-dot per inch (dpi) print quality for clean, crisp text and stunning graphics.
- High quality ink that doesn't smudge or fade quickly. Additionally, printout quality does not deteriorate as the cartridge runs out of ink. The printer maintains the same print quality regardless of how many characters have been printed.
- Simple maintenance thanks to a convenient ink cartridge that contains both print head and ink. When the printer runs out of ink, you simply replace the cartridge. Each cartridge can print up to 500 pages (700,000 characters) in the high quality (HQ) mode, and up to 1,000 pages (1,400,000 characters) in the high speed (HS) mode.
- Quiet printing thanks to the non-impact printing method and Canon's famous Bubble-Jet technology.

How to use this book

Take some time to get acquainted with the features of your printer by browsing through this book. The book is divided into the following sections:

Part 1 Describes the contents and conventions of this manual and shows you how to connect the fax to a computer.

Part 2 Shows you how to control the printer through the printer control panel on the fax.

Part 3 Shows you how to install a printer driver, select the printer control mode, and how to use the printer with software applications. It also shows you how to use the printer with Windows™.

Part 4 Shows you how to customise the printer to meet your own particular needs.

Part 5 Shows you how to keep your printer in good working order and what to do if problems occur.

Part 6 Provides information for advanced users, including; printer and interface specifications, summary tables of the BJ-10 emulation and Epson LQ emulation printer commands, and character sets.

Part 1

Before Starting

This section describes how to set up the fax for use as a printer. Before doing any of the procedures explained in this section, make sure that you have set up the fax as described in the *Instruction Book* that came with the fax.

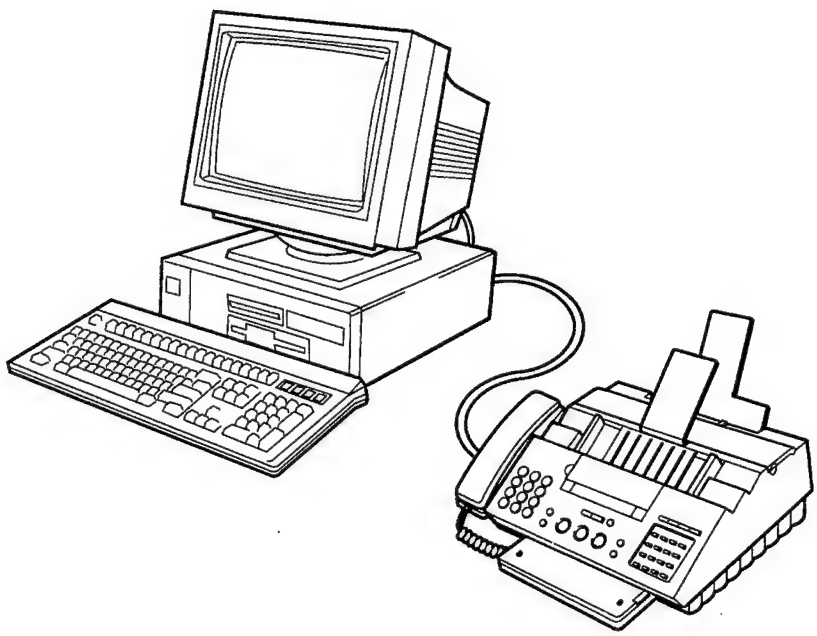
Getting Ready to Print

Finding the right location

You probably already have your fax set up for use as a fax machine. You should have your fax and computer fairly close together to facilitate connections and to make an efficient and comfortable work environment. The illustration below shows a possible arrangement for your fax and computer.

To avoid communication problems between the built-in printer and your computer, locate your working area away from possible sources of electromagnetic interference, such as loudspeakers of the base units or cordless telephones.

For more information about how to set up, see the *Instruction Book* that came with the fax.

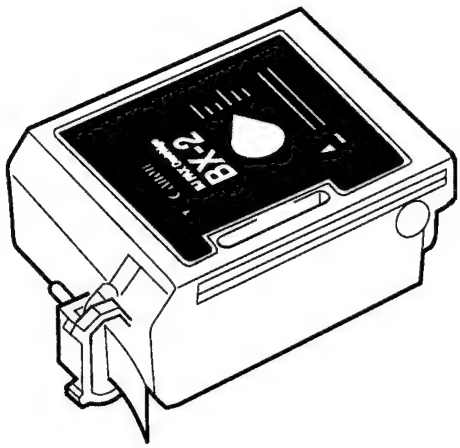


The illustration above shows a good way to arrange your fax and computer.

A word about the ink cartridge

The actual number of pages you can print varies according to the type of documents you normally print. If you print a lot of graphics or pages full of single-spaced text and bold text, you may need to change cartridges more often. However, if you normally print double- and triple spaced documents with a minimum of graphics and bolding, you may be able to get more out of each cartridge.

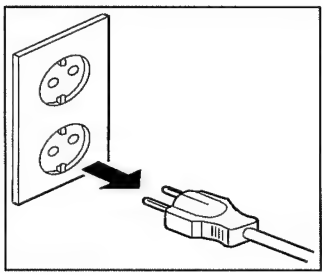
When replacing an ink cartridge, use only Canon BX-2 cartridges.
For details on how to install the ink cartridge, see the *Instruction Book* that came with the fax.



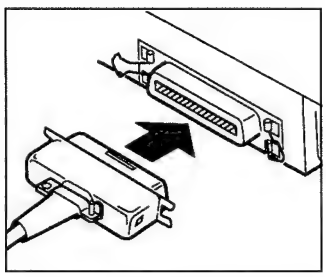
The Bubble-Jet print cartridge.

Connecting the fax to a computer

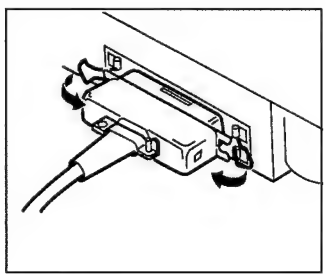
Your fax has an 8-bit, parallel interface port. In order to connect the fax to a computer, you have to obtain a Centronics-compatible, parallel interface cable. These cables are standard in the computer industry and can be purchased at any computer store. If you are unsure about the type of cable you need, ask your computer store or Canon-authorised dealer for assistance.



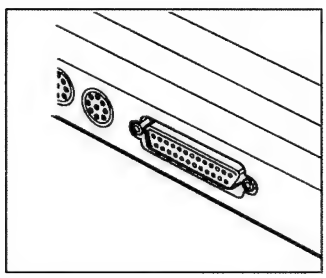
1 Unplug the power cord of the fax from the electrical outlet. Then turn off the computer.



2 Align the cable connector with the *Centronics* interface port on the fax so that the shapes match. Then gently insert the Centronics-compatible cable connector into the port.

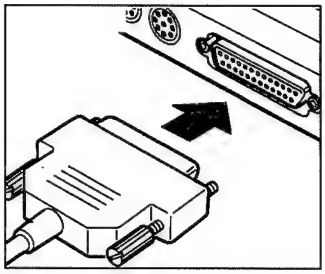


3 Secure the cable connector by snapping the two wire clips into the cable connector.



4 Locate the parallel printer port on the computer.

Check the instructions that came with the computer for details on the configurations of the ports.



5 Connect the other end of the interface cable into the parallel printer port on your computer.

Turning the printer on and off

Printer on

To turn on the printer, simply press the printer key on the fax control panel. The printer key should light and you will hear the printer preparing itself for printing.

✓ When the printer key is lit, you cannot use the fax to send or copy documents. However, the fax will receive documents automatically in the memory. When finished using the printer, switch the fax back to fax operations by turning the printer off. This will prevent the memory from filling up with documents received while the printer was turned on.

Printer off

To turn off the printer, press the printer key on the fax. The printer key should turn off.

CAUTION
The print head automatically returns to its starting position and caps itself when not in use. This prevents the ink from drying out. Never unplug the power cord when the printer is in use. If you do, the print head will not be able to cap itself, allowing ink to dry on the head and ultimately making the cartridge unusable.

Cleaning the print head

The print head on a new ink cartridge needs to be cleaned to ensure that you get the best possible print quality. Follow this procedure to clean the print head.

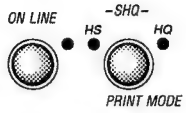
✓ Cleaning the print head consumes a small amount of ink. Repeating this procedure unnecessarily reduces the capacity of the cartridge.

1 Turn the printer on.

The printer key lights when the printer is on. If the key doesn't light, press the printer key again.

2 Make sure the printer is on-line.

The ON LINE lamp lights when the printer is on-line. If the key doesn't light, press the [ON LINE] key.



3 Press and hold ON LINE and PRINT MODE at the same time.

The ON LINE lamp blinks for about 12 seconds while the printer cleans the print head. The ON LINE lamp stops blinking and goes off when cleaning is finished. The printer stays off-line until you press the [ON LINE] key again.

After cleaning, press the printer key again to turn the lamp on the key off.

Part 2

Using the Fax Control Panel and Testing the Printer

There are two ways to control the printer:

- By the control panel on the fax.
- By commands in software applications.

This section shows you how to control the printer using the fax control panel. You also learn how to do print tests to check that the printer is operating properly.

For information on controlling the printer by commands inside applications, see page 57.

Using the Fax Control Panel

This section shows you how to control the printer using the keys located on the fax control panel.

Most software applications come with printer drivers that allow you to control the printer by commands found within the application. For example, a word processing programme will usually have a command that tells the printer what typeface to use and when to perform a line feed.

However, you can also control basic printer operations using the control panel on the fax. This is useful if your software application does not have the printer driver necessary to control the printer. You also use the control panel to select printer-specific functions (such as the print mode) and to start the self-tests described in this section.

Turning the printer on and off

1 Press the printer key on the fax control panel to turn the printer on and off.

The key lights when the printer is on. For more details on turning the printer on and off, see page 5.

Setting the printer on- and off-line

Setting the printer *on-line* means to complete the connection between your printer and computer so that the two can communicate with each other. Follow this procedure to set the printer on- and off-line.

1 To set the printer on-line, press ON LINE.

The ON LINE lamp lights when the printer is on-line. This means it is ready to communicate with the computer.

2 To set the printer off-line, press ON LINE again.

The ON LINE lamp goes off when the printer is off-line. This means that it cannot communicate with the computer.

Feeding paper

You can feed paper in the following ways:

- Feed a new sheet of paper to the starting print position.
- Feed paper one line at a time.

Follow this procedure to feed paper.

✓ Before doing this procedure, make sure the printer is off-line. For details on setting the printer off-line, see page 8.

1 To feed a new sheet of paper, press LF/FF.

The printer feeds the paper to the starting print position.

2 To feed paper that has already been fed into the printer one line at a time, press LF/FF.

The printer feeds the paper one line.

Ejecting paper

Follow this procedure to eject paper.

✓ Before doing this procedure, make sure the printer is off-line. For details on setting the printer off-line, see page 8.

1 Press and hold LF/FF for more than one second.

The printer ejects the current piece of paper. To both eject the paper and feed a new sheet of paper into the printer, press and hold the key for about two seconds.

Pausing and restarting printing

Follow this procedure to temporarily pause printing, either when controlling the printer by the control panel, or by commands in a software application.

1 While printing, press ON LINE.

The ON LINE lamp goes off and printing stops.

2 To resume printing, press ON LINE again.

The ON LINE lamp lights and the printer begins printing from where it left off.

Selecting the print mode

Your printer has three print modes. These allow you to choose print speed, print quality, and operating noise level. Select the print mode as follows:

- Use HQ mode for most of your printing needs. The printer sets itself for automatic printing when you first turn it on.
- Use the SHQ mode for extremely high quality printouts and/or when you want the printer to operate very quietly. In this mode, the printouts are darker since the printer uses more ink than in the HQ mode. Thus, your documents may appear bolder than in HQ mode.
- Use the HS mode for printing first drafts of documents. Your document will print faster but the printouts will be lighter than in HQ mode. The HS mode uses half the amount of ink as the HQ mode.

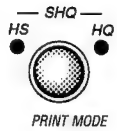
The following table shows the characteristics of the different print modes.

Print mode	Function	Speed (at 10 cpi)
HQ	High quality printing	173 cps
SHQ	Super high quality and silent printing	124 cps
HS	High speed and draft quality printing	248 cps

Follow this procedure to select the print mode.

1 Make sure the printer is off-line.

For details on putting the printer off-line, see page 8.



2 Press PRINT MODE.

The lamps light to show the setting:

HQ *High quality printing*

SHQ *Super high quality printing*

HS *High speed (draft) printing*

Keep pressing the [PRINT MODE] key until the appropriate lamp lights.

NOTE
If you are using the Epson LQ emulation and you selected "Draft" in the custom setting, the printer automatically sets itself to the HS mode when you first put the printer on-line. For more details on printer emulation, see page 30. For more details on the custom settings, see page 35.

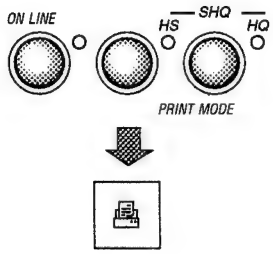
Setting the printer for automatic line feeds

Follow this procedure to set the printer to perform an automatic line feed each time it receives a carriage return. Each time the printer receives a carriage return code from the computer, it moves to the beginning of the next line.

✓ You only need to make this setting if you are using a print driver from an application programme that does not include a carriage return with a line feed function. If after making this setting you notice an extra blank line between each line printed, it means the application programme includes a carriage return with a line feed function. If this happens, cancel this function.

1 Make sure the printer is turned off.

The printer key should not be lit. If it is, press the key again until it is not lit.



2 Press and hold ON LINE, LF/FF, and PRINT MODE. Then press the printer key until the printer beeps.

To cancel this setting, turn the printer off. When you turn the printer on again, this setting will be off.

Testing the Printer

This section shows you how to check how the printer is working by making test prints.

There are two different types of test prints:

- The printer self-test.
- The font list test.

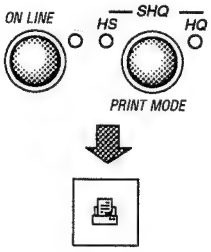
Performing the printer self-test

Follow this procedure to make a self-test printout. With this test, the printer prints a repeating pattern of characters in the default print mode and pitch.

You can perform the self-test using either the BJ-10 or Epson LQ emulations. Using the BJ-10 emulation, the test pattern is printed using the Courier typeface at 10 cpi and the HQ print mode. Using the Epson LQ emulation, the test pattern is printed using the Roman typeface at 10 cpi and the HQ print mode.

1 Press the printer key to turn the printer off.

The printer key should not be lit. If it is, press the key again until it is not lit.

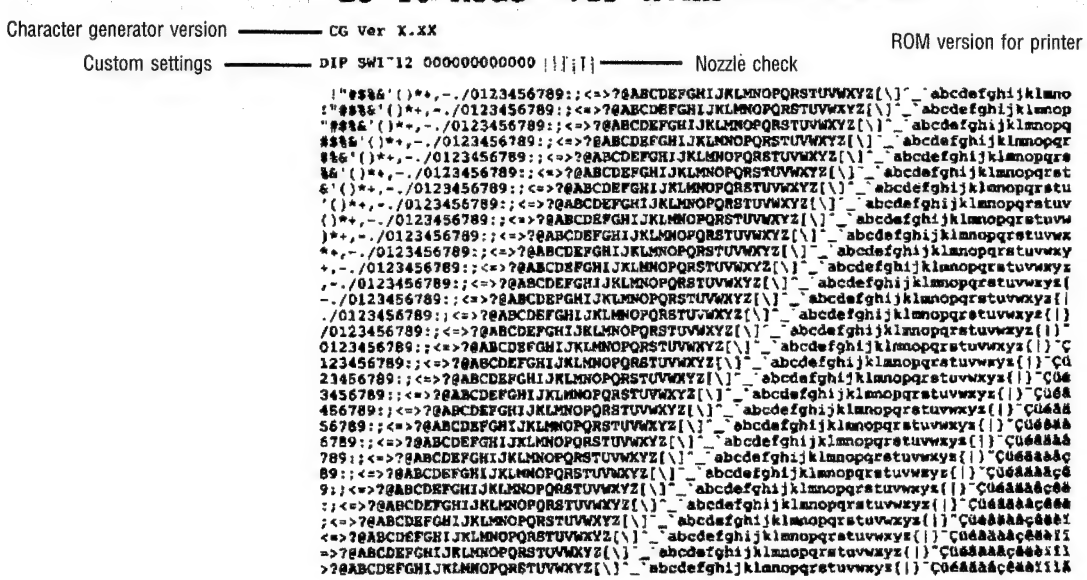


2 Press and hold ON LINE and PRINT MODE. Then press and hold the printer key until the printer beeps.

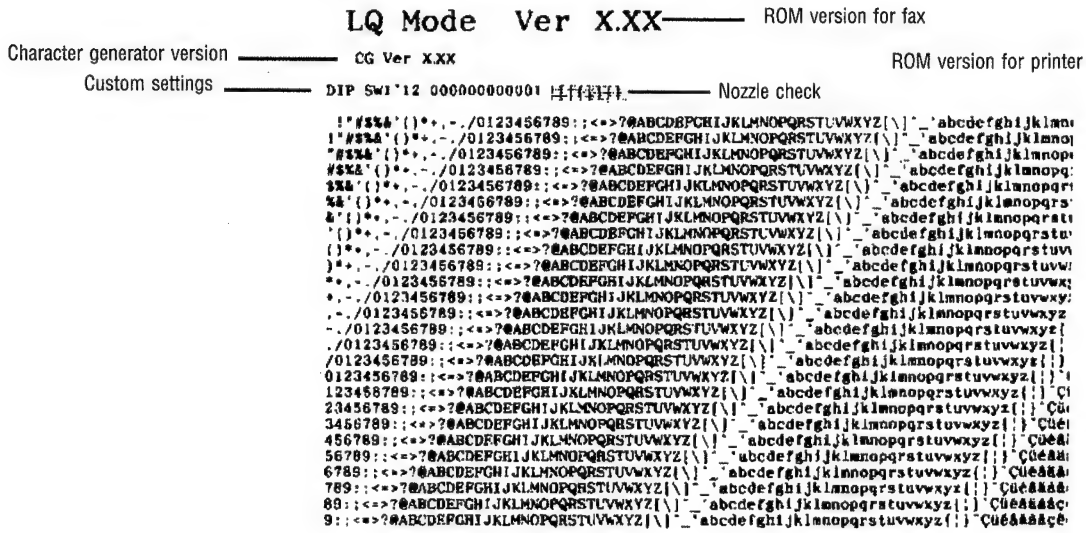
The printer starts to print the self-test.

To stop the self-test, press and hold the [ON LINE] and [PRINT MODE] keys for at least one second. The printer stops the self-test, and ejects the paper. Then it goes back on-line.

The BJ-10 emulation self-test looks like this:



The LQ Epson emulation self-test looks like this:



Printing the font list

Follow this procedure to print the font list. The printer will print characters in the available print styles and pitches.

You can print a font list using either the BJ-10 or Epson LQ emulations.

1 Press the printer key to turn the printer off.

The printer key should not be lit. If it is, press the key again until it is not lit.

2 Press and hold ON LINE. Then press and hold the printer key until the printer beeps.

The printer starts to print the font list.

To stop printing the font list, press and hold the [ON LINE] key for at least one second. The printer stops printing, ejects the paper, and goes back on-line.

The BJ-10 emulation font list looks like this:

The Epson LQ emulation font test looks like this:

Part 3

Using the Printer with Software Applications

Your printer will work with a wide variety of applications, such as spreadsheet, word processing, and graphics programme. This section describes how to use the printer with various applications.

Using the Printer with Windows™

This section shows you how to install the appropriate printer driver so that you can use the printer with the Microsoft© Windows™ operating system environment, version 3.1.

✓ Before doing this procedure, make sure you are familiar with the basic operation of Windows, including use of the mouse. For details, see the Microsoft Windows 3.1 User's Guide for help.

Installing the printer driver

1 Make sure your computer is turned on.

2 Make a backup copy of the disk containing the Canon printer driver for Windows.

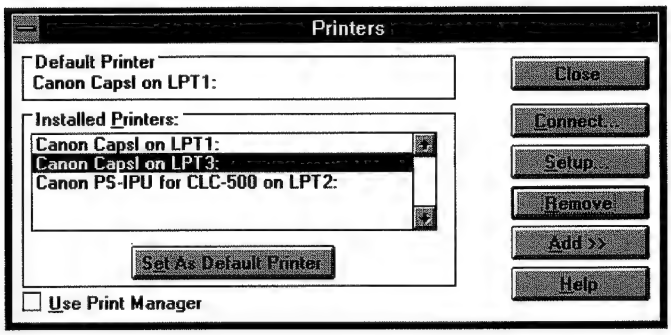
3 Start Windows and do the following procedure.

Windows 3.1

Follow this procedure to install the printer driver for Windows version 3.1

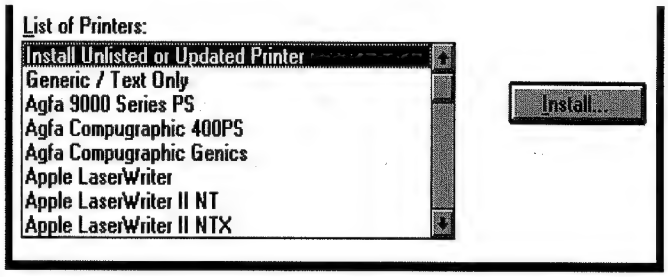
1 Select Control Panel from the Main Group window in the Programme Manager.

2 Open the Printers icon.

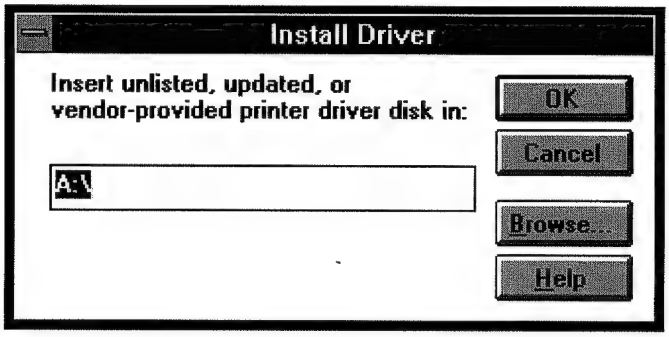


The Printers dialogue box appears. The display may show printers in the Installed Printers box. This means other printers have been installed in your computer system. This should not cause any problems.

3 Select the Add button to display the List of Printers box.



4 Select Install Unlisted or Updated Printer from the beginning of the List of Printers. Then choose Install.

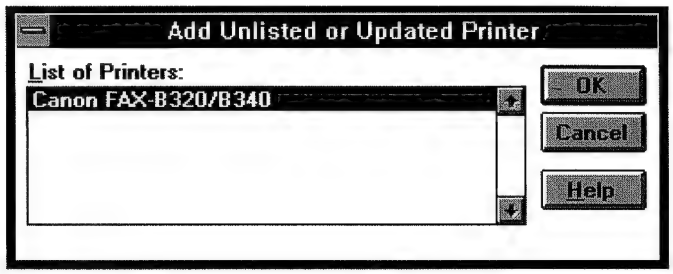


A dialogue box appears instructing you to insert the disk that contains the printer driver.

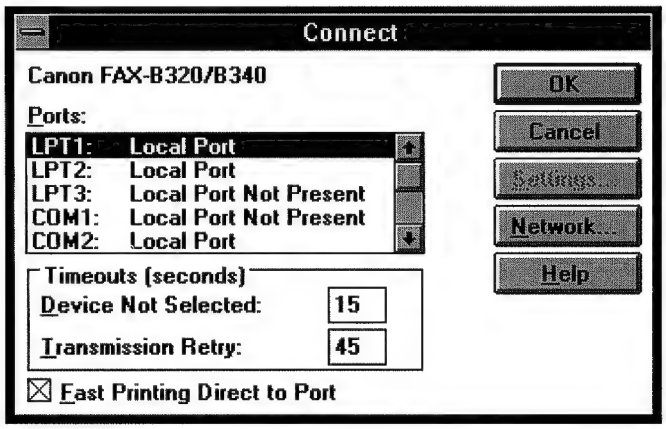
5 Insert the disk containing the Canon FAX-B320/B340 Windows printer driver into disk drive A. Then select OK.

If you are not using drive A, you can enter the path name that identifies the drive you are using, or use Browse to locate the drive.

6 Select Canon FAX-B320/B340 from the List of Printers. Then select OK.



7 If you need to change the printer port designation, make sure Canon FAX-B320/B340 is selected in the Installed Printers box. Then select the Connect button to display the Connect dialogue box.



8 Select the printer port. Then select OK.

9 If you intend to use the fax printer as your main computer printer, select the Set As Default Printer button from the Printers dialogue box.

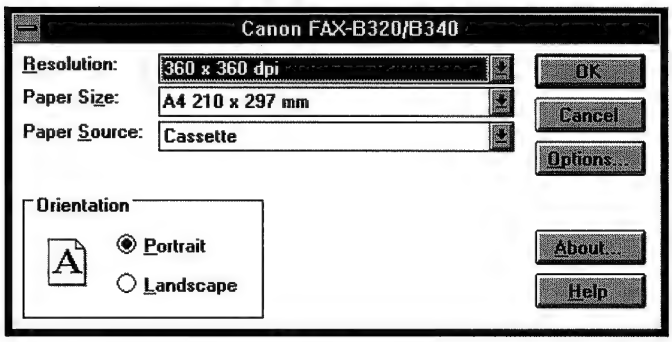
10 Select the Close button to complete installation of the Canon printer driver.

Printer set-up within Windows

After you install the Canon FAX-B320/B340 printer driver for Windows, you should run the printer set-up programme. This is located in the control panel for the printer.

1 If you are using Windows 3.1, select the Set-up button.

When you start the Set-up programme, Windows displays the main dialogue box for your printer:



From this screen, you can select the desired printer resolution, paper size, and orientation. You can also access the About, Help, and Options sub-menus.

2 Click on the arrow next to the Resolution setting to select one of the following resolutions:

- *360 x 360 dpi (the default resolution)*
- *180 x 180 dpi*
- *90 x 90 dpi*

3 Click on the arrow next to the Paper Size setting to select one of the following paper sizes:

- *A4 210 x 297 mm (the default paper size)*
- *Letter 8 1/2 x 11 in*
- *Legal 8 1/2 x 14 in*

4 Click on the arrow next to the Paper Source setting to select "Paper Cassette".

5 Select the paper orientations by clicking on one of the following buttons in the Orientation box:

- *Portrait (the default orientation)*
- *Landscape*

6 If you want to find out copyright information regarding the Windows driver and its version number, select About.

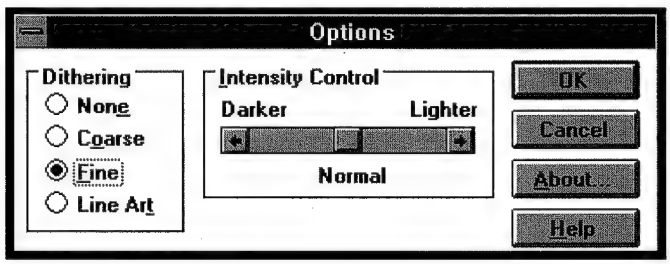
and/or

If you want to enter Microsoft's Universal Driver Help programme, select Help.

The Printer Set-up screen displays information that will help you specify the printer settings.

and/or

If you want to choose other printer options, select Options. Then go on to step 7.



From this screen you can select a dithering pattern and an intensity level. You can also display other About and Help information.

7 Select one of four dithering patterns for graphics printing: None, Course, Fine, or Line Art.

"None" causes all colour values to threshold to either black or white. No in between colours will be represented as shades of grey. The default dither pattern is "Fine."

8 Select the intensity of the printouts.

You can control the intensity of printed text using the Intensity Control box. This controls the threshold at which a pixel value is turned on or off.

- *Setting the slide bar to the left prints darker.*
- *Setting the slide bar to the right prints lighter.*

This control only affects the dithering options. The default is the value represented at the centre of the slide bar. (In some applications, setting the slide bar all the way to the right causes nothing to print.)

Printing documents in Windows™

The following procedure explains general printing guidelines for many applications you may run in Windows. The exact steps for printing a document may vary depending on the software application you are using. For exact details on printing documents, see the instructions that came with the software application.

1 Start the programme you used to create the document. Then open the document you want to print.

2 Select Print Set-up from the File menu.

3 Select the "Specific Printer" option, then select the Canon FAX-B320/B340 as your printer in the list box.

4 Select OK.

5 Select Print from the File menu.

6 Make the desired settings in the Print window. Then press OK.

The printer starts printing the document.

Troubleshooting when printing in Windows™

If the printer prints garbage characters, does not print at all, or if the Windows message "Cannot Print, check if printer is Off-line." appears, try the following:

1 Check the printer cable.
2 Check the length of the cable being used. The maximum recommended cable length is 2.0 m.
3 Avoid using A/B switch boxes or switch boxes that have a total cable length of more than 2.0 m.
4 Under the Main group in the Programme Manager, choose the Control Panel Icon. Next select the Printer Icon. Within the Printer Control Panel, select Connect, and disable "Fast Printing Direct to Port."
5 Disable the Print Manager under the Printer Control Panel.

Using the Printer without Windows™

This section explains how to set up and use the printer outside of the Windows™ operating environment. If you installed the Canon FAX-B320/B340 Windows printer driver as described in the previous section and will be printing only under Windows, you can ignore this information.

Software applications are designed to work with specific hardware set-ups. Most software applications include an installation programme or routine that you run to tell the software what type of hardware you are using, such as your computer and printer.

Most software applications include a set of instructions that control printing operations from within the programme. These instructions are called printer drivers. There are many kinds of different printers available and each printer (or type of printer) requires its own printer driver in order for you to control it from within the application. Before using the fax's built-in printer with your software applications, you need to tell the application what type of printer you are using by selecting the appropriate printer driver.

Selecting the right printer driver

The install programmes for most software applications offer a list of printer drivers from which to choose. When installing your software application and you are asked to select a printer, select one of the following:

- Canon FAX-B320/B340
- Canon BJ-200
- Canon BJ-10 series printers

Either of these drivers will allow you to control the fax's built-in printer from within the software application.

If you do not find one of these printer drivers in the list, select a driver from the following list. (The drivers are listed in order of preference.) These drivers have nearly the same operating characteristics as the BJ-200 driver.

When the printer is set for Canon BJ-10 emulation:

- Canon FAX-B320/B340
- Canon BJ-200 (X24E)
- Canon BJ-10e/BJ-10ex/BJ-20 (X24E)
- IBM Proprinter X24E/XL24
- IBM Proprinter X24/XL24E
- Canon BJ-130e
- IBM Proprinter

When the printer is set for Epson LQ emulation:

- Canon FAX-B320/B340
- Canon BJ-200 (LQ)
- Canon BJ-20 (LQ)
- Canon BJ-10e/BJ-10ex (LQ)
- Epson LQ-510
- Epson LQ-850
- Epson LQ-500
- Epson LQ printer

After selecting a printer driver, you can use the built-in printer commands of the software application for all standard printer functions. This includes bold or double-strike printing, underlining, subscripts, superscripts, margin control, line-spacing control, and graphics.

NOTE

Software developers are continually creating printer drivers. If your application software does not list a Canon BJ-200 driver and you do not want to use one of the alternative selections, call your software application's technical support line and ask if a BJ-200 driver is currently available.

Selecting a printer emulation

The fax's built-in printer can emulate two different types of printers:

- Canon BJ-10 series printers (the default emulation)
- Epson LQ series printers

We recommend that you use the Canon BJ-10 emulation for the fullest range of features. However, if the software application you are using does not offer one of the drivers recommended for when the printer is set for BJ-10 emulation, but does offer Epson LQ series printer drivers, change the printer to the Epson LQ emulation. Then select one of the Epson LQ printer drivers. For details on setting the printer emulation, see "Customising Printer operations" on page 30.

Another consideration when selecting the proper emulation is whether you plan to print only text, or text and graphics. For text only printing, you may want to use the Epson LQ emulation. This emulation gives you a greater variety of fonts from which to choose. For graphics only or combination text and graphics printing, the Canon BJ-10 emulation gives the best quality printouts.

The following table lists the print styles that are available for each printer emulation.

Print Style	BJ-10 Emulation	Epson LQ Emulation
Italic	No	Yes
Emphasised	Yes (via ESC E sequence)	Yes (via ESC E sequence)
Double-high	Yes (via ESC [@ sequence)	Yes (via ESC w sequence)
Double-wide	Yes (via ESC W sequence)	Yes (via ESC W sequence)
Slashed zero	Yes (via ESC [K sequence)	No

The following table shows you the type characteristics of each emulation:

Font/Typeface	BJ-10 Emulation	Epson LQ Emulation
Prestige	12 characters per inch (cpi) in HQ mode only	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Courier	10 cpi, 12 cpi*, 11 cpi, proportional spacing (PS)**	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Sans Serif	Not available	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Draft (available in HS mode only)	Not available	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Roman	Not available	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Script	Not available	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Orator	Not available	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS
Orator-S	Not available	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS

* With the BJ-10 emulation, Courier 12 cpi is available in HS mode only.
** With the BJ-10 emulation, proportional spacing is not available in HS mode.

Using printer control codes and ESCape sequences to control the printer

Normally you control the printer by commands inside the software applications, or by using the controls on the fax control panel. However, certain specialised applications require that you control the printer by special command sequences known as *control codes* and *ESCape sequences*. These command sequences tell the printer such things as how many lines to skip and where to start printing.

Some control codes are standard throughout the microcomputer industry and are recognised by all printers. Two examples of these are form feed (FF) and line feed (LF).

ESCape sequences are unique to each printer emulation. ESCape sequences begin with the ESCape character followed by one or more other characters. The ESCape character tells the printer not to print the next character(s), and the following character(s) give instructions to perform a printing task, such as bold or underline printing.

How you enter control codes and ESCape sequences depends on your software application. Also, your application may require you to enter these codes and sequences in a specific format, such as decimal or hexadecimal.

Part 4

Customising the Printer

This section shows you how to customise certain operations of the built-in printer.

Customising Printer Operations

The built-in printer has a number of settings that you can modify to fit your own particular needs when printing documents from your computer. For example, you can change the printer emulation, paper size setting, printer character sets, and typefaces, to mention just a few.

Setting the printer emulation

Follow this procedure to set the printer emulation. You can select either the BJ-10 or Epson LQ emulation. The factory preset setting is the BJ-10 emulation.

✓ Before doing this procedure, read "Notes when doing registration procedures" in the *Instruction Book* that came with the fax.

1 Press FUNCTION.

```
SELECT MENU
```

2 Press 7. Then press START/COPY.

```
SELECT MENU
 7. BJ PRINT SETTINGS
```

```
CONTROL SETTINGS
                BJ-10
```

3 Use the search key to make the setting. Then press START/COPY.

```
CONTROL SETTINGS
                LQ
```

You can choose either the BJ-10 or Epson LQ emulation.

4 Press STOP.

The operation ends and the fax returns to standby.

Customisation menu for BJ-10 emulation

The following list shows the printer settings you can customise and explains each one. There are two different customisation menus, one for the BJ-10 emulation and one for the Epson LQ emulation. Use this menu if you set the printer for BJ-10 emulation. (The default emulation.) The Epson LQ emulation menu is shown on page 34. For details on changing the emulation, see page 30.

- **TEXT SCALE SET**
  Allows you to select the number of lines that can fit on a piece of paper, either 63 or 66 lines. Turn text scaling on ("ENABLE" setting) if the software application you are using assumes that each piece of paper equals 66 lines. Turn text scaling off ("DISABLE" setting) for other applications.

- **PAGE LENGTH**
  Allows you to select a page length of either 11" (letter-size) or 12" (A4-size.)

- **CHARACTER SETTING**
  Allows you to select the character set. You can choose from two different character sets. The setting you choose depends on the characters you want to print. For more details on character sets (including charts showing all the characters in each set), see page 61.

- **AUTO CR**
  Allows you to select whether or not you want the printer to perform a carriage return after each line feed.

- **AGM MODE SET**
  Allows you to set the printer to accept high-resolution, 24-dot, all-points-addressable (APA) graphics commands, similar to those used with conventional 24-pin printer. Select "ENABLE" for printing documents containing graphics. Select "DISABLE" for text only documents.

- **CODE PAGE SET**
  Allows you to select the code page, either USA Code Page 437 or USA Code Page 850. Each code page has two different character sets. The setting you choose depends on the type of characters you want to print and the operating system of your computer. For more details on code pages (including charts showing all the characters in each code page), see page 61.

- **DOWNLOAD BUFFER**
  Allows you to change the allocation of the *print buffer*. The print buffer is the memory in the printer which accepts data. Select "40KB" if you use *downloadable* fonts (i.e. fonts not resident in the printer but fonts that you *download* from your computer.) In this way, 40 KB of space in the print buffer will be allocated for downloadable fonts and 9 KB for data. Select "0KB" if you don't use downloadable fonts. This will leave the entire 49 KB of space available for data.

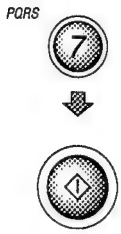
Making the custom settings for BJ-10 emulation

Follow this procedure to customise the printer when using the BJ-10 emulation. For details on the items that you can change, see the BJ-10 customisation menu on page 31.

✓ Before doing this procedure, read "Notes when doing registration procedures" in the *Instruction Book* that came with your fax.

1 Press FUNCTION.

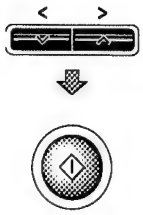
```
SELECT MENU
```



2 Press 7. Then press START/COPY.

```
SELECT MENU
 7. BJ PRINT SETTINGS
```

```
CONTROL SETTINGS
                    LQ
```



3 Use the search keys to display "BJ-10." Then press START/COPY.

```
CONTROL SETTINGS
                  BJ-10
```

```
BJ-10
    1. TEXT SCALE SET
```

4 Use the search keys to display the item you want to set.

```
BJ-10
 3. CHARACTER SETTING
```

TEXT SCALE SET
Turns text scaling on or off.

PAGE LENGTH
Changes the page length setting, either 11" (letter-size) or 12" (A4-size).

CHARACTER SETTING
Changes the character set, either SET 1 or SET 2.

AUTO CR
Sets the carriage return after each line feed function on or off.

AGM MODE SET
Turns AGM printing on or off.

CODE PAGE SET
Changes the code page setting, either (USA) 437 or (USA) 850.

DOWNLOAD BUFFER
Changes the allocation of the print buffer, either to accept downloadable fonts or not.

5 Press START/COPY.

CHARACTER SETTING SET 1

6 Use the search keys to make the setting.

CHARACTER SETTING SET 2

For the "TEXT SCALE SET" item.
ENABLE: Turns text scaling on.
DISABLE: Turns text scaling off.

For the "PAGE LENGTH" item.
11": For letter-size paper.
12": For A4-size paper.

For the "CHARACTER SETTING" item.
SET 1: For character set 1.
SET 2: For character set 2.

For the "AUTO CR" item.
LF WITH CR: Carriage returns after each line feed.
LF ONLY: Carriage does not return after each line feed.

For the "AGM MODE SET" item.
ENABLE: Turns AGM printing on.
DISABLE: Turns AGM printing off.

For the "CODE PAGE SET" item.
437: For Code Page USA 437
850: For Code Page USA 850

For the "DOWNLOAD BUFFER" item.
0KB: Does not allow you to download fonts.
40KB: Allows you to download fonts.

7 Press START/COPY.

8 Press STOP.

Customisation ends and the fax returns to standby.

Customisation menu for Epson LQ emulation

The following list shows the printer settings you can customise and explains each one. There are two different customisation menus, one for the BJ-10 emulation and one for the Epson LQ emulation. Use this menu if you set the printer for Epson LQ emulation. (The default emulation is BJ-10.) The BJ-10 emulation menu is shown on page 31. For details on changing the emulation, see page 35.

- **TEXT SCALE SET**
  Allows you to select the number of lines that can fit on a piece of paper, either 63 or 66 lines. Turn text scaling on ("ENABLE" setting) if the software application you are using assumes that each piece of paper equals 66 lines. Turn text scaling off ("DISABLE" setting) for other applications.

- **PAGE LENGTH**
  Allows you to select a page length of either 11" (letter-size) or 12" (A4-size.)

- **CHARACTER SETTING**
  Allows you to select the character set. You can choose from two different character sets. The setting you choose depends on the characters you want to print. For more details on character sets (including charts showing all the characters in each set), see page 70.

- **INT'L CHAR. SET**
  Allows you to select the character set depending on which language you are printing. You can choose from eight different language sets.

- **TYPEFACE SETTINGS**
  Allows you to select the typeface. You can choose from eight different typefaces.

Making the custom settings for Epson LQ emulation

Follow this procedure to customise the printer when using the Epson LQ emulation. For details on the items that you can change, see the Epson LQ customisation menu on page 34.

✓ Before doing this procedure, read "Notes when doing registration procedures" in the *Instruction Book* that came with your fax.

1 Press FUNCTION.

```
SELECT MENU
```

2 Press 7. Then press START/COPY.

```
SELECT MENU
 7. BJ PRINT SETTINGS
```

```
CONTROL SETTING
                BJ-10
```

3 Use the search keys to display "LQ." Then press START/COPY.

```
CONTROL SETTINGS
                LQ
```

```
LQ
     1. TEXT SCALE SET
```

4 Use the search keys to display the item you want to set.

```
LQ
 3. CHARACTER SETTING
```

TEXT SCALE SET
Turns text scaling on or off.

PAGE LENGTH
Changes the page length setting, either 11" (letter-size) or 12" (A4-size).

CHARACTER SETTING
Changes the character set, either Italics or Graphics.

INT'L CHAR. SET
Changes the international character set from one of eight languages.

TYPEFACE SETTINGS
Changes the typeface setting from one of eight typefaces.

5 Press START/COPY.

CHARACTER SETTING ITALICS

6 Use the search key to make the setting.

CHARACTER SETTING GRAPHICS

For the "TEXT SCALE SET" item.
ENABLE: Turns text scaling on.
DISABLE: Turns text scaling off.

For the "PAGE LENGTH" item.
11": For letter-size paper.
12": For A4-size paper.

For the "CHARACTER SETTING" item.
ITALICS: For italics character set.
GRAPHICS: For graphics character set.

For the "INT'L CHAR. SET" item.
USA: Selects the USA character set.
UK: Selects the United Kingdom character set.
GERMANY: Selects the German character set.
FRANCE: Selects the French character set.
DENMARK: Selects the Danish character set.
SWEDEN: Selects the Swedish character set.
ITALY: Selects the Italian character set.
SPAIN: Selects the Spanish character set.

For the "TYPEFACE SETTINGS" item.
ROMAN: Selects the Roman typeface.
SANS SERIF: Selects the Sans-serif typeface.
DRAFT: Selects the Draft typeface.
COURIER: Selects the Courier typeface.
PRESTIGE: Selects the Prestige typeface.
SCRIPT: Selects the Script typeface.
ORATOR: Selects the Orator typeface.
ORATOR-S: Selects the Orator-S typeface.

7 Press START/COPY.

8 Press STOP.

Customisation ends and the fax returns to standby.

Part 5

Troubleshooting

This section is included to help you deal with just about any problem you might encounter over the years. It explains basic troubleshooting that can help you solve any unexpected problems that may occur.

Be assured that Canon's interest in you didn't stop when you bought the fax. Our sales and service representatives are always ready to answer any questions you might have regarding the operation of the fax.

Troubleshooting

This section shows you how to solve minor printer problems that may occasionally occur. A problem may have one or a combination of causes, including a malfunction in your computer, software, the printer cable, or the printer. Many printing problems are related to how your software interacts with the printer.

If your printer is not operating properly, try the suggestions in this section.

Operation problems

Follow the suggestions listed below to solve problems related to the operation of your hardware (printer and computer). Try the solutions in the order listed.

The printer does not turn on.

- If the indicator lamps do not light, the fax may not be plugged in. Make sure the fax is plugged in.
- When the printer is connected properly, the power, on-line, and HQ (or HS) indicators will light, and the print head will be in the home position.
- Make sure the printer key is lit. If it isn't, press it until it lights.

The indicators light, but the printer does not print.

If the printer is plugged in and the indicators light, there may be a problem either with the printer or its communication with your computer. Follow these steps to correct the problem.

1 **Make sure the printer is on-line. Then try printing again.**
The on-line indicator should light. If it doesn't, press the [ON LINE] key.

2 **Check the interface cable connection. Then try printing again.**
Make sure you have connected the correct interface cable to your computer and that the connections are secure.

3 **Make sure that paper is loaded properly in the sheet feeder. Then try printing again.**
For details on loading paper, see the *fax Instruction Book.*

4 **Make sure the ink cartridge is installed properly. Then try printing again.**
For details on installing the ink cartridge, see the *fax Instruction Book.*

5 **Run one of the test prints described on page 13. Then try printing again.**
If you can print a test print, the problem is probably with communication between the printer and your computer.

6 **Make sure that the computer is set up correctly for your printer.**
For details on setting up the computer for the printer, see page 17. Additionally, refer to the instructions that came with your computer and software application.

7 **Print a screen dump from your computer.**
For details on printing a screen dump, see the instructions that came with your operating system.

The ON LINE, HS, and HQ lamps blink.
A RAM/ROM error has probably occurred. Follow these steps to correct the problem.

1 **Unplug the fax to turn off power.**

2 **Wait 15 seconds, and plug the fax back in.**

3 **Press the printer key on the fax control panel.**
The on-line indicator should blink for a few seconds and then light. The print head should also move to the home position.

PRINT ERROR lamp is on.
Follow these steps to correct the problem.

1 **Make sure there is paper loaded in the sheet feeder.**
If the printer is out of paper, load paper into the sheet feeder and press [ON LINE] to continue printing. For details on loading paper, see page 8 in the *fax Instruction Book.*

2 **Make sure the paper is not jammed.**
If the paper is jammed, clear the jam. For details on clearing jams, see page 40.

Paper loading problems

Follow the suggestions listed below to solve problems related to loading paper. Try the solutions in the order listed.

1 **Make sure the paper is not sticking together. Then try printing again.**
Remove the stack of paper and fan it. Then load it into the paper cassette again.

2 **Make sure you have not stacked too many sheets of paper in the paper cassette. Then try printing again.**
Try removing a few sheets of paper from the sheet feeder.

3 **Make sure you loaded only one kind of paper in the paper cassette. Then try printing again.**

Characters on printed pages are skewed.
Make sure the stack of paper is straight in the paper cassette.

Paper does not eject after printing
Most software applications tell the printer to eject the paper after printing, however, some do not. If the printer does not automatically eject a sheet of paper after printing, press the [ON LINE] key to set the printer off-line. Then press and hold the [LF/FF] key for one second. This should eject the paper.

Paper jams occur
If a paper jam occurs, the ERROR lamp lights and the printer will go off-line. Follow these steps to correct the problem.

1 **Press the printer key to turn the printer off.**

2 **See the *Instruction Book*** that came with your fax for details on how to remove paper jams.

3 **Press the printer key on the fax control panel to turn the printer on.**

The ON LINE lamp should blink for a few seconds and then light. The print head should also move to the home position.

✓ If you experience paper jams repeatedly, it may be due to the paper you are using or how you are loading the paper. To prevent paper jams, note the following:

- Be sure to fan the paper before loading it in the sheet feeder. This keeps the paper from sticking together.

- Be sure the paper you are using and your printing environment conform to the specifications of the fax. For details on paper specifications, see page 46. For details on the proper operating environment, see page 48.

Print quality problems

If the print quality is not what you expect it to be, check the following items for your problem and a possible remedy.

Print density is low.
The print density of each of the three printer modes is different:
- The HS mode print density is low.
- The density of the HQ mode is high.
- The density of SHQ is very high.

If you are using HS mode and not getting satisfactory density in your printouts, try the HQ or SHQ modes.

Printing is not clear.
Some paper can produce better printouts on one side than the other. If the print quality is not as clear as you would like it to be, try turning the paper over and printing on the other side. Also, make sure the paper thickness lever (inside the printer) is set for your paper type.

Characters are blurred or smudged.
Make sure you are using the recommended paper. For details on the proper paper to use, see the *Instruction Book* that came with the fax. Also, make sure the paper thickness lever inside the printer is set properly according to the type of paper that you loaded.

Back of document is smudged.
Make sure the platen is free from ink and dirt. Clean the platen by feeding a few sheets of paper through the printer.

Characters appear jagged.
Make sure your software application is set to print at 360 dpi. Printing at 180 dpi (or any lower resolution) gives a jagged look to output. Changing the resolution to 360 dpi should correct this.

Print quality is irregular.
If white streaks appear on the printed page or dots are missing in the printed output, clean the print head as described in the *Instruction Book* that came with the fax.

Some areas of document contain ink stains.
Printing high density graphics in the SHQ mode may occasionally cause ink stains to appear. Change to the HQ or HS modes. Then try printing again.

Print quality is consistently poor in any mode or on any type of paper.

- Make sure the print head is clean. Paper dust or ink may get clogged in an ink nozzle in the print head. Clean the print head regularly to avoid problems. For details on cleaning the print head, see page 6.

- If the print quality is still not crisp and clear after cleaning the print head, try the head cleaning procedure again. If your output is not satisfactory after cleaning the print head five consecutive times, the cartridge may be damaged. Replace the ink cartridge.

Other printing problems

This section contains infrequent problems and solutions that are not covered in the preceding sections.

Strange characters appear in printed documents.
There may be a communications problem between the printer and your computer. Follow these steps to correct the problem. Try the solutions in the order listed.

1 **Check that your cable connections are secure. Then try printing again.**

2 **Check that the printer emulation (BJ-10 or Epson LQ) matches the printer driver you selected in the application software.**
For details on setting the printer emulation, see page 30. For details on selecting a printer driver in the application software, see page 18.

Characters on the screen do not match printed characters.
Many graphics characters and special symbols are produced by different ASCII codes on each make of computer and printer. Compare the character set in your computer manual with the printer character sets shown in Appendix C. Set the correct character table and printer control mode. For details on making the settings, see pages 31 and 36.

Characters appear beyond the margins.
There may be a number of reasons for this problem. Follow these steps to correct the problem. Try the solutions in the order listed.

1 **Make sure the paper is loaded correctly in the paper cassette. Then try printing again.**
For details on loading paper, see page the *fax Instruction Book.*

2 **Make sure the margins (left, right, top, and bottom) have been set correctly in the software application. Then try printing again.**
For details on setting the margins, see the instructions that came with your software application.

3 **Make sure the page length setting has been set. Then try printing again.**
For details on setting the page length in the software application, see the instructions that came with your application. For details on setting the page length in the printer, see pages 31 and 34.

The printer is not using the font you selected.
Your software is overriding the custom settings. Change the initialisation or set-up string that your software sends. You may need to do this using a menu or screen provided by your application software. See your application user's manual for information about how your software works with your printer.

Computer indicates a device time-out.
A device time-out occurs when your computer sends data to the printer but the printer does not respond. The printer may be off, off-line, or not connected to the computer. If your computer indicates a device time-out, follow these steps:

1 **Make sure the printer is on and on-line.**

2 **Make sure the printer's interface cable is securely attached to both the printer and the computer.**

3 **Make sure paper is properly loaded in the cassette.**

4 **Try the print operation again.**

Part 6

Specifications and Appendices

This section gives you detailed information regarding the inner workings of the fax printer, including:

- General printer specifications
- Timing charts
- Control codes and escape sequences
- Character sets

Normally, you won't need to read this section. However, programmers, hardware engineers, and other advanced computer users will find this section useful.

Appendix A Printer Specifications

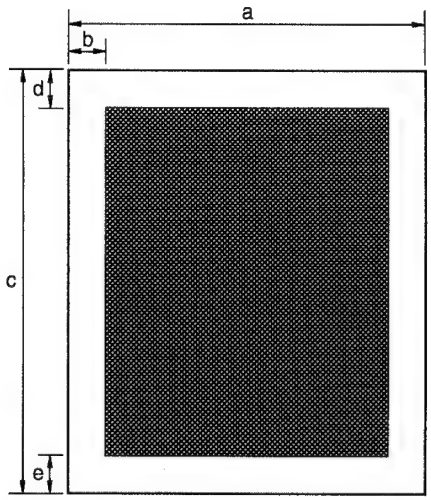
Printing Method Bubble-Jet ink

Paper Handling Automatic feed

Sheet Feeder Capacity Plain paper:
Maximum 100 sheets (75 g/m^2)– maximum thickness of stacked paper = 10 mm

Paper Size Letter: 8.5" x 11"
Legal: 8.5" x 14"

Printing Area Paper



Horizontal
a) 210 mm to 216 mm
b) 3.4 mm – A4-size paper
6.4 mm – letter-size paper

Vertical
c) 279 mm to 356 mm
d) 12.7 mm
e) 8 mm

NOTE
The usable printing area for printing from a computer is different than that for fax operations.

Paper Type Plain paper

Paper Weight 75 to 90 g/m^2 with automatic feed

Paper Thickness 0.1 to 0.12 mm thick

Printing Speed HS mode: 248 cps in 10 cpi, 496 cps in 20 cpi
HQ mode: 173 cps in 10 cpi, 346 cps in 20 cpi
SHQ mode: 124 cps in 10 cpi, 248 cps in 20 cpi

Printing Direction Bidirectional in text
Unidirectional in graphics

Printing Width Maximum 203 mm

Line Feed Speed 100 ms/line at 1/6" line in HQ, HS mode
190 ms/line at 1/6" line in SHQ mode

Resident Printer Control Modes
BJ-10 Mode: IBM Proprinter X24E emulation
Epson LQ Mode: Epson LQ-510 emulation

Line Feed Pitch
BJ-10 mode: 1/6", 1/8", n/60", n/72", n/180", n/216", and n/360" (n:programmable)
Epson LQ mode: 1/6", 1/8", n/180", and n/360" (n: programmable)

Printing Characters
Typeface
BJ-10 Mode: Prestige and Courier
Epson LQ Mode: Roman, Sans serif, Courier, Prestige, Script, Orator, Orator-S, and Draft

Pitch
BJ-10 Mode: 10 cpi, 12 cpi, 17 cpi, and PS
Epson LQ Mode: 10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, and PS

Cell Composition
36 (h) x 48 (v) dot matrix in HQ, SHQ mode
18 out of 36 (h) x 48 (v) dot matrix in HS mode

Character Set
BJ-10 Mode: IBM Character Sets 1, 2, and 3 (code pages 437 and 850)
Epson LQ Mode: Italics character set and Graphics character set

Maximum No. of Characters per Line

BJ-10 Mode:

Mode	Pitch	Characters per line
10 cpi	10 cpi	80 cpl
10 cpi double-wide	5 cpi	40 cpl
10 cpi condensed	17 cpi	136 cpl
10 cpi condensed, double-wide	8.5 cpi	68 cpl
12 cpi	12 cpi	96 cpl
12 cpi double-wide	6 cpi	48 cpl
Proportional spacing	PS	Varies

Epson LQ Mode:

Mode	Pitch	Characters per line
10 cpi	10 cpi	80 cpl
10 cpi double-wide	5 cpi	40 cpl
10 cpi condensed	17 cpi	136 cpl
10 cpi condensed, double-wide	8.5 cpi	68 cpl
12 cpi	12 cpi	96 cpl
12 cpi double-wide	6 cpi	48 cpl
12 cpi condensed, double-wide	10 cpi	80 cpl
15 cpi	15 cpi	120 cpl
15 cpi double-wide	7.5 cpi	60 cpl
Proportional spacing	PS	Varies

Graphic Image Print

Data Format	Vertical 8, 24, and/or 48-dot format	
Resolution	Horizontal 60, 120, 180, 240, or 360 dpi	
Buffer	*BJ-10 Mode*	
	Input buffer:	49 KB (or 9 KB)
	Download buffer:	0 KB (or 40 KB)
	Epson LQ Mode	
	Input buffer:	11 KB
	Download buffer:	39 KB
Interface	8-bit parallel	
Ink Cartridge	Type:	BX-2 (single cartridge ink supply)
	Print head:	64 bubble jet nozzles
	Ink Colour:	Black
	No. of characters:	Approx. 700,000 characters/ cartridge in HQ mode Approx. 1,400,000 characters/cartridge in HS mode
	Ink Amount:	Approx. 28 g
Operating Environment	Temperature:	10° C to 32.5° C
	Humidity:	20% to 80% RH (no condensation)

Power source	200 V/240 V (50 Hz/60 Hz)
Weight	Approx. 7 kg excluding paper.
Dimensions	440 mm (W) x 332 mm (D) x 154 mm (H)

Appendix B Interface Specifications

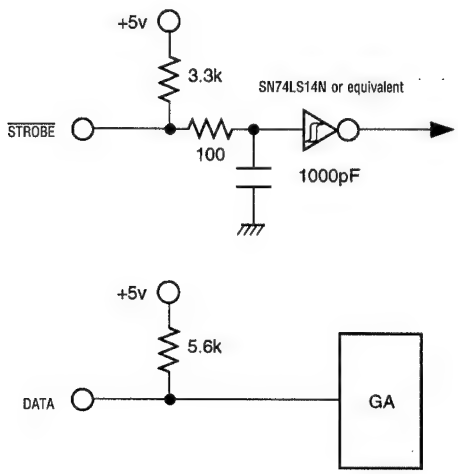
This printer is equipped with the standard Centronics-type parallel interface for data communications. You use this interface to connect the printer to a computer. This interface is the most widely used interface on personal computers and does not require set-up commands or special configurations on either the computer or printer. The printer's parallel interface connector is a standard Amphenol type with two metal-wire retaining clips.

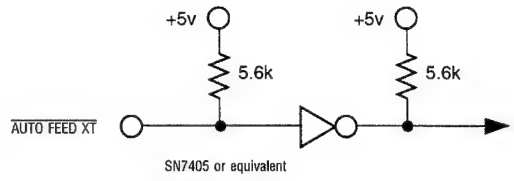
Specifications

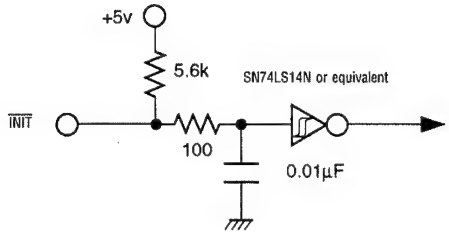
The parallel interface sends 8 bits (one byte) of data at one time and is transistor-transistor-logic (TTL) compatible.

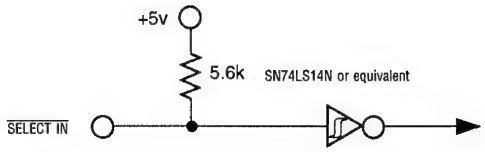
The interface cable must be constructed of American Wire Gauge (AWG) No. 28 or larger. The maximum length of the twisted-pair, shielded cable must be approximately 2.0 m.

Interface type	Standard Centronics-type
Data transmission	8-bit parallel interface (compatible with IBM and other personal computers)
Signal voltage levels	Low: 0.0 V to +0.4 V High: +2.4 V to +5.0 V
Input circuit	

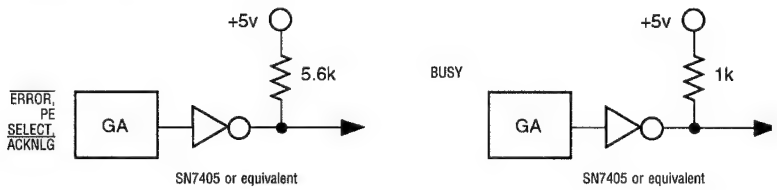








Output circuit



Interface cable	Twisted-pair, shielded cable AWG28 or larger; up to 2.0 m
Interface connectors	Amphenol 57-40360 (or equivalent) at printer side Amphenol 57-30360 (or equivalent) at cable side

Pin assignments

The following table lists the signals and input/output status of the pin assignments used for parallel communication.

No.	Signal	I/O	No.	Signal	I/O
1	$\overline{\text{STROB}}$	IN	19	$\overline{\text{STROBE}}$-RET[1]	
2	DATA 1	IN	20	DATA 1-RET	
3	DATA 2	IN	21	DATA 2-RET	
4	DATA 3	IN	22	DATA 3-RET	
5	DATA 4	IN	23	DATA 4-RET	
6	DATA 5	IN	24	DATA 5-RET	
7	DATA 6	IN	25	DATA 6-RET	
8	DATA 7	IN	26	DATA 7-RET	
9	DATA 8	IN	27	DATA 8-RET	
10	$\overline{\text{ACKNLG}}$	OUT	28	$\overline{\text{ACKNLG}}$-RET	
11	BUSY	OUT	29	BUSY-RET	
12	P.E.	OUT	30	PAPER END-RET	
13	$\overline{\text{SELECT}}$	OUT	31	$\overline{\text{INIT}}$	IN
14	$\overline{\text{AUTO FEED XT}}$[2]	IN	32	$\overline{\text{ERROR}}$	OUT
15	NO CONNECTION		33	GND	
16	GND		34	NO CONNECTION	
17	GND		35	+5.0V [3]	OUT
18	NO CONNECTION		36	$\overline{\text{SELECT IN}}$[2]	IN

[1] All-RETs are connected to GND.
[2] These signals are valid only in Epson LQ printer control mode.
[3] The level is raised to +5.0V at 3.3kΩ register.

Each signal is defined as follows:

$\overline{\text{STROBE}}$
When the printer receives the $\overline{\text{STROBE}}$ low pulse with a width greater than one second from the computer, it reads the data from the interface and sets the BUSY line high.

DATA
These signals are the 8 bits of parallel data sent from the computer. A high level indicates a logical 1; a low level indicates a logical 0. The printer reads the DATA lines when it receives a STROBE pulse.

$\overline{\text{ACKNLG}}$
The $\overline{\text{ACKNLG}}$ pulse tells the computer that the printer has read the data from the previous $\overline{\text{STROBE}}$ pulse. An $\overline{\text{ACKNLG}}$ pulse is also generated when the printer is powered on, or at the completion of the printer initialisation by an $\overline{\text{INIT}}$ signal requested from the computer.

BUSY
When the printer sets BUSY high, it cannot receive data. The BUSY line goes high in response to a $\overline{\text{STROBE}}$ pulse. This line remains high until the data is read. BUSY is also high under the following conditions:
- The receive buffer is full of data.
- The printer receives an $\overline{\text{INIT}}$ signal.
- You press the [ON LINE] key to set the printer off-line.
- A printer error condition, such as out-of-paper, occurs.

PAPER END
The printer sets Paper End high when it is out of paper or when a paper jam occurs. Paper end remains high until you load paper and press the [ON LINE] key.

$\overline{\text{SELECT}}$
When the printer is ready, it sets the $\overline{\text{SELECT}}$ line high. The $\overline{\text{SELECT}}$ line goes low when:
- You press the [ON LINE] key to set the printer off-line.
- An error condition, such as out-of-paper, occurs.
- The printer receives the Printer Deselect command. It ignores all incoming data except DC1, which returns it to a selected state.

$\overline{\text{AUTO FEED XT}}$
When this signal is low, the printer automatically feeds the paper one line when it receives a carriage return (CR) control code. This signal is valid only in Epson LQ mode.

$\overline{\text{INIT}}$
$\overline{\text{INIT}}$ from the system resets the printer to its initial power-on state. The BUSY line goes high, and any received data is printed. When $\overline{\text{INIT}}$ goes low, the printer resets to the power-on default state.

$\overline{\text{ERROR}}$
The printer sets the $\overline{\text{ERROR}}$ line low if it detects an error, such as an out-of-paper condition.

$\overline{\text{SELECT IN}}$
When this signal is high, the DC1 and DC3 control codes are valid; otherwise, they are invalid. This signal is valid only in Epson LQ mode.

Timing Chart

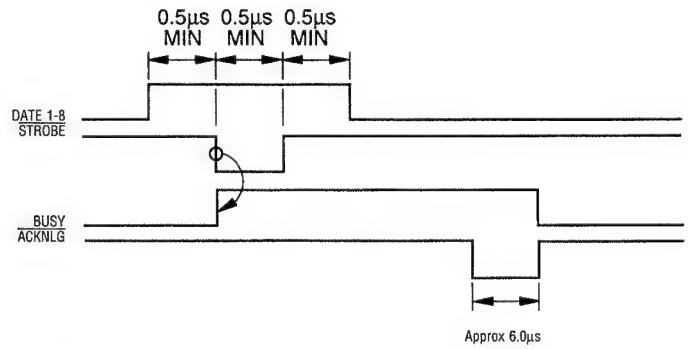
The parallel interface transfers data in one direction only: from the computer to your printer. The data path is 8 bits wide. The printer and computer synchronise data transfer with the interface signals, $\overline{\text{STROBE}}$, $\overline{\text{ACKNLG}}$, and BUSY.

When the computer is ready to send a byte of data to the printer, it puts the byte of data on the data lines (DATA 1 through DATA 8). Then the computer sends a $\overline{\text{STROBE}}$ pulse to the printer. The printer responds with a BUSY signal.

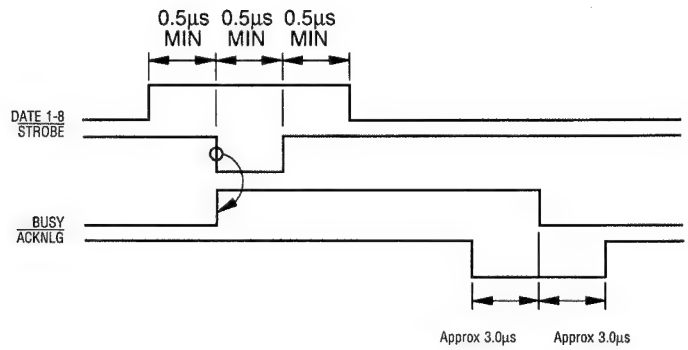
When the printer receives the data, it pulses the $\overline{\text{ACKNLG}}$ line. This signals the computer that the printer has read the byte of data into printer memory. If the printer's buffer is not full and it can receive more data, it removes the BUSY signal.

The timing charts that follow illustrate the data and handshake lines during transfer of one data byte to the computer. DATA 1 through DATA 8 and the $\overline{\text{STROBE}}$ line are driven by the computer; the $\overline{\text{ACKNLG}}$ line is driven by the printer.

Timing chart in the BJ 10 mode



Timing chart in the Epson LQ mode



Appendix C Command Summaries/Character Sets

This appendix lists the control codes and ESCape sequences you can use for BJ-10 emulation and Epson LQ emulation, and shows the character sets available for each emulation.

Control codes and ESCape sequences tell the printer how to print a job. You send commands to the printer in one of two ways:

- You can use your application software to automatically embed certain commands (such as bold, underline, or indent) within a document. When the document prints, the embedded commands control the way the printer produces the printed page. Refer to your application software manual for instructions on sending commands.
- You can send specific commands directly to the printer, using either a BASIC programming statement or a printer command option in your software.

BJ-10 Command Summary

You can use the control codes and ESCape sequences listed in the following table when the printer is set for BJ-10 emulation.

NOTE
Because of hardware differences, the reverse feed code (ESC]) and the printer deselect code (DC3) are not supported by your printer. Also, the styles of block graphics characters at 12 cpi are different from normal IBM Proprinter X24E printing.

Basic Control Codes

Function	ASCII	Decimal	Hexadecimal
End command	NUL	0	00
Sound beeper	BEL	7	07
Back space one character	BS	8	08
Horizontal tab control; move to next tab	HT	9	09
Perform line feed	LF	10	0A
Vertical tab control; move to next tab	VT	11	0B
Perform form feed	FF	12	0C
Perform carriage return	CR	13	0D
Set double-wide mode by line	SO	14	0E
Set condensed mode (17 cpi); cancelled by DC2	SI	15	0F
Set printer on-line	DC1	17	11
Set 10 cpi mode	DC2	18	12
Cancel double-wide mode	DC4	20	14
Cancel data	CAN	24	18
Insert space	SP	32	20

ESCape Sequence Codes

Function	ASCII	Decimal	Hexadecimal
Set/cancel underscore mode n Setting 0 End underscore 1 Start underscore	ESC - n	27 45 n	1B 2D n
Set 1/8-inch line spacing (8 lpi)	ESC 0	27 48	1B 30
Set 7/72-inch line spacing (7/72 inch per line)	ESC 1	27 49	1B 31
Enable line spacing set by ESC A	ESC 2	27 50	1B 32
Set graphics line spacing in n/180-inch increments; n= 1 to 85	ESC 3 n	27 51 n	1B 33 n
Set top of form	ESC 4	21 52	1B 34
Set/cancel automatic LF n Setting 0 End automatic line feed 1 Start automatic line feed	ESC 5 n	27 53 n	1B 35 n
Select IBM Character Set 2	ESC 6	27 54	1B 36
Select IBM Character Set 1	ESC 7	27 55	1B 37
Set 12-cpi, Prestige mode	ESC:	27 58	1B 3A
Download 24-dot, font image	ESC = n1 n2 35	27 61 n1 n2 35	1B 3D n1 n2 23
Download 48-dot, font image	ESC = n1 n2 %	27 61 n1 n2 37	1B 3D n1 n2 25
Set text line spacing to n/72 inch per line n = 1 to 255	ESC A n	27 65 n	1B 41 n
Set vertical tabs; n1...n64 = line numbers for tab stops	ESC B n1...n64 NUL	27 66 n1...n64 0	1B 42 n1...n64 00
Set page length in lines; n = 1 to 255	ESC C n	27 67 n	1B 43 n

Function	ASCII	Decimal	Hexadecimal
Set page length in inches; n = 1 to 8.5	ESC C NUL n	27 67 0 n	1B 43 00 n
Set horizontal tabs; n1 . . .n32 = columns for tab stops	ESC D n1 . . .n32 NUL	27 68 n1 . . .n32 0	1B 44 n1 . . .n32 00
Set emphasised mode to start printing in twice the normal dot density	ESC E	27 69	1B 45
Cancel emphasised mode set by ESC E	ESC F	27 70	1B 46
Set double-strike mode	ESC G	27 71	1B 47
Cancel double-strike mode set by ESC G	ESC H	27 72	1B 48
Select font style	ESC I n	27 73 n	1B 49 n
Perform graphics line spacing; n = 0 to 255	ESC J n	27 74 n	1B 4A n
Set single-density image graphics	ESC K n1 n2	27 75 n1 n2	1B 4B n1 n2
Set double-density image graphics	ESC L n1 n2	27 76 n1 n2	1B 4C n1 n2
Set perforation skip; n = 0 to 255 lines	ESC N n	27 78 n	1B 4E n
Cancel perforation skip	ESC O	27 79	1B 4F
Set/cancel proportional spacing mode n Setting 0 End proportional spacing 1 Start proportional spacing	ESC P n	27 80 n	1B 50 n
Deselect printer	ESC Q n	27 81 n	1B 51 n
Set all tabs to default setting	ESC R	27 82	1B 52

Function	ASCII	Decimal	Hexadecimal
Set super/subscript mode n Setting 0 Select superscript mode 1 Select subscript mode	ESC S n	27 83 n	1B 53 n
Cancel super/subscript mode set by ESC S	ESC T	27 84	1B 54
Select print direction	ESC U n	27 85 n	1B 55 n
Set/cancel double-wide mode n Setting 0 Cancel double-wide mode 1 Start double-wide mode	ESC W n	27 87 n	1B 57 n
Set horizontal margins; n and m = 0 to 255	ESC X n m	27 88 n m	1B 58 n m
Set double-density image graphics mode	ESC Y n1 n2	27 89 n1 n2	1B 59 n1 n2
Set quadruple-density image graphics mode	ESC Z n1 n2	27 90 n1 n2	1B 5A n1 n2
Set/cancel presentation highlight (double-high mode)	ESC [@ n1 n2 m1 m2 m3 m4	27 91 64 n1 n2 m1 m2 m3 m4	1B 5B 40 n1 n2 m1 m2 m3 m4
Select global font	ESC [I	27 91 73	1B 5B 49
Set initial condition	ESC [K n1 n2	27 91 75 n1 n2	1B 5B 4B n1 n2
Set code page	ESC [T n1 n2	27 91 84 n1 n2	1B 5B 54 n1 n2
Change graphics line spacing	ESC [\ n1 n2	27 91 92 n1 n2	1B 5B 5C n1 n2
Select high resolution graphics mode	ESC [g n1 n2	27 91 103 n1 n2	1B 5B 67 n1 n2
Print continuously from All Characters Chart	ESC \ n1 n2	27 92 n1 n2	1B 5C n1 n2
Print single character from All Characters Chart	ESC ^	27 94	1B 5E

Function	ASCII	Decimal	Hexadecimal
Set/cancel overscore mode n Setting 0 Cancel overscore mode 1 Set overscore mode	ESC _ n	27 95 n	1B 5F n
Relative move in-line to the right	ESC d n1 n2	27 100 n1 n2	1B 64 n1 n2
Set printer off-line	ESC j	27 106	1B 6A

Alternate Graphics Mode Codes

Function	ASCII	Decimal	Hexadecimal
Select graphics mode (AGM)	ESC * m n1 n2	27 42 m n1 n2	1B 2A m n1 n2
Set graphics line spacing (AGM); n = 0 to 255	ESC 3 n	27 51 n	1B 33 n
Set text line spacing (AGM); n = 1 to 85	ESC A n	27 65 n	1B 41 n
Perform graphics line spacing (AGM); n = 0 to 255	ESC J n	27 74 n	1B 4A n

Miscellaneous Control Codes

Function	ASCII	Decimal	Hexadecimal
Set 360 dpi graphics	FS C B	28 67 66	1C 43 42
Set/perform 1/360-inch graphics line spacing	FS C J n m	28 67 74 n m	1C 43 4A n m

BJ-10 Character Sets

For the BJ 10 emulation, your printer supports two IBM code pages: USA code page 437 and Multilingual code page 850. Each code page has three character sets: Character Set 1, Character Set 2, and All Characters Chart.

Each code page corresponds to an All Characters Chart. For the All Characters Chart, there are no control codes except for the space code at ASCII 32. All other ASCII characters are printable. The All Characters Chart is selected by the ESC A or the ESC \ code.

Character Set 1 has control codes in two places: one between ASCII 0 and ASCII 32 and the other between ASCII 128 and ASCII 159. Character Set 2 has control codes only between ASCII 0 and 32. All other ASCII characters are printable.

The three character sets for each code page are shown on the following pages.

✓ A control code is an unprintable character that the printer uses for printer operations, such as line spacing or carriage return.

USA Code Page 437

Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0		SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128		á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	| 179	├ 195	╙ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246	0110
7	BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	BEL 135	151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	■ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	FS 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	− 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¡ 173	╜ 189	═ 205	▌ 221	∅ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	<< 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	>> 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

USA Code Page 437

Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	♥ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	◆ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246	0110
7	BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	∅ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pts 158	<< 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	Å 143	ƒ 159	>> 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

USA Code Page 437

All Characters Chart

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	0	▶ 16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	☺ 1	◀ 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241	0001
2	☻ 2	↕ 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	♥ 3	‼ 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	◆ 4	¶ 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	♠ 6	▬ 22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246	0110
7	• 7	↨ 23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	◘ 8	↑ 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	○ 9	↓ 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	◙ 10	→ 26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	♂ 11	← 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251	1011
C	♀ 12	∟ 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	♪ 13	↔ 29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	∅ 237	2 253	1101
E	♫ 14	▲ 30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pts 158	<< 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	☼ 15	▼ 31	/ 47	? 63	O 79	_ 95	o 111	⌂ 127	Å 143	ƒ 159	>> 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Multilingual Code Page 850

Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	á 160	▒ 176	└ 192	ð 208	Ó 224	− 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	í 161	▓ 177	┴ 193	Ð 209	ß 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244	0100
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246	0110
7	BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	BEL 135	151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	156	¼ 172	╝ 188	╠ 204	▬ 220	ý 236	³ 252	1100
D	CR 13	29	− 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	<< 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	>> 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Multilingual Code Page 850

Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	− 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	Ð 209	ß 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	È 210	Ô 226	= 242	0010
3	♥ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243	0011
4	♦ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246	0110
7	BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▬ 220	ý 236	³ 252	1100
D	CR 13	29	− 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	× 158	<< 174	¥ 190	╬ 206	ì 222	¯ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	Å 143	ƒ 159	>> 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Multilingual Code Page 850

All Characters Chart

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	0	▶ 16	32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	- 240	0000
1	☺ 1	◀ 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	Ð 209	ß 225	± 241	0001
2	☻ 2	↕ 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242	0010
3	♥ 3	!! 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	| 179	├ 195	Ë 211	Ò 227	¾ 243	0011
4	♦ 4	¶ 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	- 196	È 212	õ 228	¶ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245	0101
6	♠ 6	▬ 22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246	0110
7	• 7	↨ 23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247	0111
8	◘ 8	↑ 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248	1000
9	○ 9	↓ 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249	1001
A	◙ 10	→ 26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250	1010
B	♂ 11	← 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251	1011
C	♀ 12	∟ 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252	1100
D	♪ 13	↔ 29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ø 157	¡ 173	¢ 189	═ 205	▌ 221	Ý 237	² 253	1101
E	♫ 14	▲ 30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	× 158	<< 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254	1110
F	☼ 15	▼ 31	/ 47	? 63	O 79	_ 95	o 111	⌂ 127	Å 143	ƒ 159	>> 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Epson LQ Command Summary

Use the control codes listed in the following tables when the printer is set for Epson LQ emulation.

✓ Because of hardware differences, the justification code, ESC a, and the perforation skip codes, ESC M and ESC N, are not supported by your printer. Also, the styles of block graphics characters at 12 cpi are different from normal Epson LQ-510 printing.

Basic Control Codes

Function	ASCII	Decimal	Hexadecimal
End command	NUL	0	00
Sound beeper	BEL	7	07
Backspace one character	BS	8	08
Horizontal tab control; move to next tab	HT	9	09
Perform line feed	LF	10	0A
Vertical tab control; move to next tab	VT	11	0B
Perform form feed	FF	12	0C
Perform carriage return	CR	13	0D
Set double-wide mode by line	SO	14	0E
Set condensed mode (17 cpi); cancelled by DC2	SI	15	0F
Set printer on-line	DC1	17	11
Cancel condensed mode (17 cpi) set by SI	DC2	18	12
Cancel double-wide mode	DC4	20	14
Cancel data	CAN	24	18
Start escape sequence	ESC	27	1B
Insert space	SP	32	20
Delete character	DEL	127	7F

ESCape Sequence Codes

Function	ASCII	Decimal	Hexadecimal
Set double-wide mode by line	ESC SO	27 14	1B 0E
Set condensed mode	ESC SI	27 15	1B OF
Control automatic sheet feeder (you cannot disable the sheet feeder) n Setting 0 Ignored 4 Ignored R Eject paper	ESC EM n	27 25 n	1B 19 n
Set inter-character space	ESC SP n	27 32 n	1B 20 n
Set/cancel various print modes (Master Select)	ESC ! n	27 33 n	1B 21 n
Cancel most significant bit (MSB) control	ESC #	27 35	1B 23
Set absolute print position	ESC $ n1 n2	27 36 n1 n2	1B 24 n1 n2
Select download character set	ESC % n	27 37 n	1B 25 n
Define downloaded characters	ESC &	27 38	1B 26
Select score mode	ESC (- n1 n2 m d1 d2	27 40 45 n1 n2 m d1 d2	1B 28 2D n1 n2 m d1 d2
Select image graphics mode	ESC * m n1 n2	27 42 m n1 n2	1B 2A m n1 n2
Set line spacing increments of n/360-inch per line; n = 0 to 255	ESC + n	27 43 n	1B 2B n
Set/cancel underscore mode n Setting 0 Start underscore 1 End underscore	ESC - n	27 45 n	1B 2D n
Select vertical tab channel	ESC /	27 47	1B 2F
Set 1/8-inch line spacing (8 lpi)	ESC 0	27 48	1B 30

Function	ASCII	Decimal	Hexadecimal
Set 1/6-inch line spacing (6 lpi)	ESC 2	27 50	1B 32
Set italic mode	ESC 4	27 52	1B 34
Cancel italic mode	ESC 5	27 53	1B 35
Enable printable range	ESC 6	27 54	1B 36
Cancel printable range expansion	ESC 7	27 55	1B 37
Copy ROM font to RAM	ESC:	27 58	1B 3A
Set unidirectional print by line	ESC <	27 60	1B 3C
Set most significant bit (MSB) to 0	ESC =	27 61	1B 3D
Set most significant bit (MSB) to 1	ESC >	27 62	1B 3E
Reassign image graphics mode	ESC ? n m	27 63 n m	1B 3F n m
Reset printer settings to the default values that were set when you turned on the printer	ESC @	27 64	1B 40
Set n/60-inch line spacing	ESC A n	27 65 n	1B 41 n
Set vertical tabs; n1, n2 = line numbers for tab stops	ESC B n1 n2	27 66 n1 n2	1B 42 n1 n2
Set page length in lines; n = 1 to 127	ESC C n	27 67 n	1B 43 n
Set page length in inches; n = 1 to 22	ESC C NUL n	27 67 0 n	1B 43 00 n
Set horizontal tabs; n1...n32 = columns for tab stops	ESC D n1...n32	27 68 n1...n32	1B 44 n1...n32
Set emphasised mode (printing in twice the normal dot density)	ESC E	27 69	1B 45

Function	ASCII	Decimal	Hexadecimal
Cancel emphasised mode set by ESC E	ESC F	27 70	1B 46
Set double-strike mode	ESC G	27 71	1B 47
Cancel double-strike mode	ESC H.	27 72	1B 48
Perform n/180-inch line feed	ESC J n	27 74 n	1B 4A n
Set single-density graphics mode	ESC K n1 n2	27 75 n1 n2	1B 4B n1 n2
Set double-density graphics mode	ESC L n1 n2	27 76 n1 n2	1B 4C n1 n2
Set 12 cpi mode	ESC M	27 77	1B 4D
Set perforation skip; n = 0 to 255 lines	ESC N n	27 78 n	1B 4E n
Cancel perforation skip	ESC O	27 79	1B 4F
Set 10 cpi mode	ESC P n	27 80 n	1B 50 n
Set right margin	ESC Q n	27 81 n	1B 51 n
Select international character set	ESC R n	27 82 n	1B 52 n
Set super/subscript mode n Setting 0 Select superscript mode 1 Select subscript mode	ESC S n	27 83 n	1B 53 n
Cancel super/subscript mode set by ESC S	ESC T	27 84	1B 54
Select print direction	ESC U n	27 85 n	1B 55 n
Set/cancel double-wide mode n Setting 0 Cancel double-wide mode 1 Start double-wide mode	ESC W n	27 87 n	1B 57 n
Set double-density graphics mode	ESC Y n1 n2	27 89 n1 n2	1B 59 n1 n2

Function	ASCII	Decimal	Hexadecimal
Set quadruple-density graphics mode	ESC Z n1 n2	27 90 n1 n2	1B 5A n1 n2
Set relative print position	ESC \ n1 n2	27 92 n1 n2	1B 5C n1 n2
Set vertical tabs in channels	ESC b	27 98	1B 62
Set 15 cpi mode; use ESC P to cancel	ESC g	27 103	1B 67
Select typeface	ESC k n	27 107 n	1B 6B n
Set left margin	ESC l n	27 108 n	1B 6C n
Set/cancel proportional space mode n Setting 0 Cancel proportional space mode 1 Start proportional space mode	ESC p n	27 112 n	1B 70 n
Select character style	ESC q n	27 113 n	1B 71 n
Select character set	ESC t n	27 116 n	1B 74 n
Set/cancel double-high mode n Setting 0 Cancel double-high mode 1 Start double-high mode	ESC w n	27 119 n	1B 77 n
Select high speed mode or high quality mode n Setting 0 Draft (HS) mode 1 High quality (HQ) mode	ESC x n	27 120 n	1B 78 n

Epson LQ Character Sets

Epson LQ Character Sets:

For the Epson LQ emulation, your printer can access the following character sets:

- Epson LQ Italics character set
- Epson LQ Graphics character set

The Italics character set has control codes in two places: between ASCII 0 and ASCII 32, and also between ASCII 128 and ASCII 159. In addition, the Italics character set has the italics characters between ASCII A0 and ASCII FF. All other characters are printable. The characters from ASCII 80 to ASCII F F correspond to IBM Character Set 2.

Epson Italics Character Set

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	SP 160	*0* 176	*@* 192	*P* 208	` 224	*p* 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	*!* 161	*1* 177	*A* 193	*Q* 209	*a* 225	*q* 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	" 162	*2* 178	*B* 194	*R* 210	*b* 226	*r* 242	0010
3	3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	DC3 147	# 163	*3* 179	*C* 195	*S* 211	*c* 227	*s* 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	$ 164	*4* 180	*D* 196	*T* 212	*d* 228	*t* 244	0100
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	% 165	*5* 181	*E* 197	*U* 213	*e* 229	*u* 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	& 166	*6* 182	*F* 198	*V* 214	*f* 230	*v* 246	0110
7	BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	BEL 135	151	' 167	*7* 183	*G* 199	*W* 215	*g* 231	*w* 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	*(* 168	*8* 184	*H* 200	*X* 216	*h* 232	*x* 248	1000
9	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	EM 153	*)* 169	*9* 185	*I* 201	*Y* 217	*i* 233	*y* 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	* 170	*:* 186	*J* 202	*Z* 218	*j* 234	*z* 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	*+* 171	*;* 187	*K* 203	*[* 219	*k* 235	*{* 251	1011
C	FF 12	28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	156	, 172	*<* 188	*L* 204	** 220	*l* 236	*|* 252	1100
D	CR 13	29	− 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	− 173	*=* 189	*M* 205	*]* 221	*m* 237	*}* 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	. 174	*>* 190	*N* 206	*^* 222	*n* 238	*~* 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	DEL 127	SI 143	159	/ 175	*?* 191	*O* 207	_ 223	*o* 239	255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

✓ The characters in the shaded areas in this table change according to the selected international character set.

Epson Graphics Character Set

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	μ 230	÷ 246	0110
7	BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251	1011
C	FF 12	28	, 44	< 60	L 76	\ 92	l 108	¦ 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	∅ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pt 158	<< 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	DEL 127	Å 143	f 159	>> 175	┐ 191	╧ 207	▀ 223	∩ 239	255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

✓ The characters in the shaded areas in this table change according to the selected international character set.

International Character Set

Use the table below to determine what characters appear in the shaded areas of the Epson character sets.

	Hex / Dec / Country	23 35	24 36	40 64	5B 91	5C 92	5D 93	5E 94	60 96	7B 123	7C 124	7D 125	7E 126	A3 163	A4 164	C0 192	DB 219	DC 220	DD 221	DE 222	E0 224	FB 251	FC 252	FD 253	FE 254
0	U.S.A	#	$	@	[	\	]	^	`	{	¦	}	~	#	$	@	[	\	]	^	`	{	¦	}	~
1	France	#	$	à	°	ç	§	^	`	é	ù	è	¨	#		à	°	ç	§	^	`	é	ù	è	¨
2	Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
3	U.K.	£	$	@	[	\	]	^	`	{	¦	}	~	£	$	@	[	\	]	^	`	{	¦	}	~
4	Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì	#	$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain I	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
8	Japan	#	$	@	[	¥	]	^	`	{	¦	}	~	#	$	@	[	¥	]	^	`	{	¦	}	~
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	Spain II	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú	#		á	¡	Ñ	¿	é	`	í	ñ	ó	ú
12	Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú	#		á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
13	Korea	#	$	@	[	₩	]	^	`	{	¦	}	~	#		@	[	₩	]	^	`	{	¦	}	~
64	Legal	#	$	§	°	'	"	¶	`	©	®	†	™	#		§	°	'	"	¶	`	©	®	†	™

Glossary

A

AGM
Alternate Graphics Mode. Available for BJ-10 and IBM Proprinter X24E emulations.

Application
Software prepared for a specific function or set of functions. Examples of applications are word processing, graphics preparation, and spreadsheets. Developers who prepare application programmes include drivers that support different types of printers.

ASCII
American Standard Code for Information Interchange. A set of definitions for the bit composition of characters and symbols. ASCII defines 128 symbols using 7 binary bits and 1 parity bit.

B

Bidirectional printing
The ability of a printer to print both left to right and right to left. The printer prints bidirectionally in text mode. See also Unidirectional printing.

BJ-10 emulation
The printer control mode in which the printer emulates the IBM Proprinter X24E. See also Epson LQ emulation.

Bold
A characteristic of a printed character that indicates wider, darker representation. Also referred to as emphasised or double-strike printing.

Bubble Jet printer
An ink-jet type printer that heats the ink to a boiling point in a nozzle to form a bubble. When the bubble expands, there is no room left in the nozzle for the ink. Therefore the ink is projected onto the paper.

Buffer
A temporary storage area in the computer's or printer's memory where data for input or output is held until it can be processed. See also Download buffer.

C

Carriage
The mechanism that moves the ink-jet cartridge across the printer to various points on the platen/paper.

Centronics
An interface standard for parallel data transmission. The interface on this printer is a Centronics-type parallel interface.

Character set
A complete collection of the characters and symbols that constitute all the elements of a language or discipline (mathematics, for example), including punctuation and numbers, with a one-to-one correspondence to the ASCII codes 00-7F (hexadecimal). The printer uses these characters to determine its printing and non-printing activities after it receives data from the computer.

Code page
A set of 256 graphic designs (characters) associated with unique code values from 0 through 255. Code page 437 is USA and code page 850 is multilingual.

Command
An instruction that tells the printer to perform a certain function. Commands are sent from the computer to the printer via the interface cable when the printer is on-line.

Condensed
A text print mode that produces a reduced character size (approximately 60% of the width of the original pitch). The printer can produce condensed text (17 cpi) for 10 cpi and condensed text (20 cpi) for 12 cpi.

Configuration
The defining of certain printer settings to allow the printer to communicate properly with your computer. You define your hardware configuration by changing software printer control switch settings, and your software configuration by entering new data or set-up strings.

Control code
Special data that invokes non-printing functions of the printer, such as line feed or carriage return. In the ASCII chart, control codes are represented by decimal numbers 0-31, 127, 128, 159, and 255.

Control panel
On this printer, the panel containing the keys used to control the printer, and the various indicator lights. You use this panel to turn the printer mode on or off, set the printer on-line or off-line, select a print mode, and so on.

cpi
Characters per inch. A unit of measurement relevant to a fixed-space font. Because all characters have the same width, you can calculate the number of characters printed per inch.

cpl
Characters per line. A unit of measurement that indicates the number of characters printed per line.

cps
Characters per second. A unit of measurement that indicates the printer's speed.

Cut sheet paper
A paper type where each sheet is separate from other sheets. This printer handles cut sheet paper.

D

Data
Information entered into or used by a computer.

dB(A)
Stands for decibel level (a decibel being a unit of measurement for the intensity of the sound coming from the printer), adjusted for background noise.

Default
A printer setting incorporated at the factory and permanently registered in the ROM of the fax. A value, action, or setting that the printer assumes unless you provide instruction to the contrary. For example, the default printer control mode on this printer is BJ-10 mode.

Dot matrix
A pattern of dots arranged in a matrix, used for creating alphanumerics, punctuation, and special characters. A matrix is described by the number of rows and columns it has, for example, 9 x 12 (108 cells).

Dot matrix printer
A non-letter-quality impact printer in which all characters are formed by a series of dots.

Double, high characters
Characters that are twice as tall as the default characters.

Double-strike
One way your printer produces bold characters. Using this method, dots are placed slightly above the dots previously printed to form a character, giving the character a thicker appearance. To use the double-strike feature, your application package must support it.

Double wide characters
Characters that are twice as wide as the default characters. This results in half as many characters per inch.

Download buffer
An area of the printer's memory that holds downloaded font information. See also Buffer.

Downloadable font
A font that is installed on the computer and, when needed, is downloaded temporarily to the printer; the font is cleared from the printer's memory when the printer is turned off.

Downloading
Downloading refers to the process of transferring fonts stored on diskettes from the computer to the printer's memory. These transferred fonts are stored in the printer until it is turned off.

dpi
Dots per inch. A unit of measurement for indicating a printer's resolution. Your printer can produce a resolution up to 360 dpi, depending on the printer control mode and the application you are using.

E

Emphasised mode
One way your printer produces bold characters. Using this method, dots are placed slightly to the left of the dots previously printed to form a character, giving the character a thicker appearance.

Epson LQ emulation
The printer control emulation in which the printer emulates the Epson LQ-510 printer. See also BJ-10 emulation.

ESCape character
A non-printing character used to signal the printer that the data that follows is an ESCape sequence.

ESCape sequences
Commands beginning with the ESCape character, which are used to control the printer. The unprintable ESCape character is followed by a unique series of letters and numbers that instruct the printer.

F

Fixed pitch spacing
Equal spacing for each character. In printing a fixed pitch font, each character, whether narrow or wide, takes up the same amount of space.

Font
A complete set of characters of the same size and style; a particular implementation of a typeface. For example, 12-point, Courier bold.

Font characteristics
Font characteristics determine the appearance of a printed font. These characteristics include orientation, character height, style, stroke weight, and typeface.

Font downloader
An application that allows you to download fonts and perform other printer functions.

Form feed
A printer function that automatically ejects the current page and advances the paper to the top of the next page. On this printer, the LF/FF key activates this printing activity.

H

Handshake
A method of communication between a computer and printer. A handshake ensures correct and complete data transfer.

High quality (HQ) mode
One of three print quality modes available on this printer. Print speed is 173 cps at 10 cpi.

High speed (HS) mode
The mode used for printing draft text on this printer. (However, the output in HS mode on this printer is much better than draft output on wire printers.) In this mode, only half the nozzles are fired and consequently less ink is used than when the printer is in high-quality (HQ) mode. Print speed in HS mode is 248 cps at 10 cpi.

I

Impact printer
A dot matrix printer that prints by a series of small pins, one for each dot in the matrix, striking through an inked ribbon.

Ink cartridge
The special type of ink cartridge used on the Canon Bubble Jet printers. The cartridge contains both the print head and ink for the printer.

Ink jet printer
A non-impact printer that ejects ink onto paper to form characters. This printer is a special type of ink jet printer called a Bubble Jet printer.

Input buffer
An area of the printer's memory containing the files that have been sent to the printer.

Interface
The connection between two devices that makes it possible for them to communicate with each other. The printer features a parallel interface, which makes it compatible with IBM and similar personal computers.

Interface cable
The cable used to create the interface between a printer and a computer.

Interface port
The printer comes with one Centronics, 8-bit, parallel interface port, located on the back of the printer. You attach the cable that connects your computer and printer here. See also Parallel interface.

Internal fonts
Internal fonts are the fonts resident in the printer when shipped. See also Resident fonts.

Italic
A font style distinguished by slanted characters (the upright strokes of the characters are at an angle to the vertical axis).

K

Kilobyte (KB)
A unit of measurement, representing the binary number 1024 bytes, used to describe printer or computer memory size in thousand-byte units.

L

Line feed
A printer function that advances the paper one line. On this printer, this function is controlled by the [LF/FF] key on the printer's operator panel.

lpi
Lines per inch. The measurement used in describing the number of lines that will print within one vertical inch. Most printing is done in 6 or 8 lpi.

M

Multilingual
Refers to code page 850, which contains the special character sets used for foreign languages.

N

Noise level
See dB(A).

Non impact printer
Printers, such as Bubble Jet, ink jet, thermal, and laser models, that form characters by means other than striking the character against the paper. These printers run more quietly than dot matrix and formed-character printers. Your printer is a non-impact printer.

O

Off-line
The printer's communication status in which you cannot transfer data from your computer to the printer. In this mode, the printer is controlled from the printer's control panel.

On-line
The printer's communication status in which it is being controlled by your computer and is ready to receive data.

Overscore
A line printed over a character. See also Underscore.

Overstrike
On dot matrix and ink jet printers, refers to placing the same character twice in the same place on a page.

P

Paper feed
Refers to guiding a sheet of paper into the printer's paper path.

Paper jam
A problem where paper is caught along the paper path. You must remove jammed paper before you can continue the printing.

Parallel interface
An interface that transmits multiple bits simultaneously (usually in one-byte segments). The Centronics type is the standard. Your printer has a built-in, Centronics-type parallel interface. See also Interface port.

Pitch
Refers to the number of characters per inch that can be composed using a fixed-space font.

Platen
Printer component that holds the paper in position during ink transfer.

Point size
Character height is defined in points; one point is 1/72 inch. For instance, this text is printed using an 8-point font.

Print head
The component on the ink cartridge that contains the 64 nozzles that eject the ink for printing.

Print head capping
An automatic protecting function that prevents the print head from drying out or becoming clogged with dust.

Print mode
A printer state during the printing operation. See also BJ-10 mode and Epson LQ mode.

Printer control mode
This printer has two printer control modes: BJ-10 and Epson LQ. BJ-10 is the default mode. The printer control mode determines the applications which can support the printer and the resolution at which graphics can be printed.

Printer driver
Software that sends printing instructions to a printer. The printer driver keeps track of the attributes of a printer and the codes the programme must send to access those attributes.

Printing area
The area of a sheet of paper on which a printer can reproduce text or graphics (the printer area is smaller than the paper.) On this printer, the print area varies depending on the type of paper being used.

Proportionally spaced font (PS font)
A font in which each character is given an amount of space proportional to its size – less for an i and more for a w.

Proportional spacing
The spacing of characters according to the width of each character. This variable spacing between each character closes up awkward space and makes text easier to read.

PS
Stands for proportionally spaced.

R

RAM
Random Access Memory. Printer memory that is used for temporary storage of information you want to print and downloaded fonts.

Resident font
A font that is built into the printer, as opposed to one that must be downloaded from your computer. Resident fonts are stored in ROM. The fonts available depend on the printer control mode you are using: BJ-10 mode or Epson LQ mode.

Resolution
The density of dots for any given output device. Expressed in terms of dots per inch (dpi). Low resolution causes font characters and graphics to have a jagged appearance. Higher resolution means smoother curves and angles as well as a better match to traditional typeface designs. This printer can produce output with 360-dpi resolution. Resolution values are represented by horizontal data and vertical data, for example, 180 x 360 dpi.

ROM
Read Only Memory.

S

Shielded
A type of cable that contains a metallic sheath over the conductor material to provide electronic protection to the communicating devices while data is being sent between them.

Subscript
One or more characters printed one-half line below the normal printing line. See also Superscript.

Super high quality (SHQ) mode
One of the printer's print quality modes. Print speed is 124 cps at 10 cpi.

Superscript
One or more characters printed one-half line above the normal printing line. See also Subscript.

T

Text mode
The mode the printer is in when it is printing text.

Text scale mode
The mode that reduces the line spacing by a factor of 14/15 (from 63 lines per page to 66 lines per page if line spacing is set to 6 lines per inch). This provides compatibility with software that assumes 66 lines will fit on each page.

Top of form (TOF)
The printing position at the start of a new page.

Typeface
The printed design of characters. For instance, Courier, Script, and Roman typefaces all print characters of different designs.

Typestyle
Refers to how the typeface appears: slanted (italic) or upright.

U

Underscore
A line printed under a character. See also Overscore.

Unidirectional printing
Printing in one direction only, left to right. The printer prints unidirectionally in graphics mode. See also Bidirectional printing.

W

Weight
Refers to the thickness of a font: light, medium, or bold.

T

U

W

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